E&MJ METAL AND MINERAL MARKETS

WEEKLY MARKET INFORMATION ISSUED BY THE PUBLISHERS OF ENGINEERING AND MINING JOURNAL

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THIS WEEK IN THE MARKETS . . .

- **Copper selling in the U.S. slow. Kaiser cuts out an aluminum production line.**
- **Tin prices move up. Lead and zinc sales slow in the U.S. London prices steady.**

COPPER—U.S. average 33c a lb delivered

Pricings of copper in the U.S. this week were down from the week ending July 13. Pricings outside the U.S., though down from last week's exceptionally high amount, were not very low.

The Chilean workers union made a great many demands on Anaconda for a new contract. The present contract ends September 30. The Chilean Copper Conciliation Board ruled that many of these demands were legal, including a wage increase. The union had asked for a 70% increase in wages. The company had rejected the workers' demands.

Reports from the Katanga area of the Congo are that European technicians are returning. But it is uncertain how much copper is being produced.

Copper buyers in the U.S. show little interest in getting metal. Copper in London yesterday morning was £257 for prompt bid (32c). Buyers in Europe show less interest than in preceding weeks.

TIN—104¼c a lb N.Y.

World tin prices continued to soar with N.Y. moving 1¾c to 104¼c and the LME jumping £9 to £218—still £12 under the Pool manager's permissable sales level. There has been some buying here by those who feel the price will move to £830. Others, fighting inflated prices, are sitting tight in belief that a high has been reached. Lack of physical tin in Europe and limited sales of 250 tpd in the East have failed to satisfy good European demand. Observers see big U.S. buyers gazing longingly at surplus Government stocks.

Tuthill & Co., representing Banka tin in the U.S., informs us that shipments of Indonesian tin ore to the U.S. have not decreased and will not decrease.

LEAD—12c a lb N.Y.

Lead sales this week were 7,438 tons. This is up from last week but a little under last month's average. Many sellers do not feel this reflects a significant drop in real demand. They had expected some slowness during the vacation period.

London prompt was £71 yesterday, almost unchanged for several weeks.

ZINC—Prime Western 13c a lb East St. Louis

Zinc sales this week were slow. The easy demand follows from the summer vacation period and a generally soft market for hard goods.

Most zinc sellers tell us the zinc market is rather firm in spite of some easing of shipments. The recent cut in premiums for Special High Grade and High Grade metal was not a sign of general weakness in zinc, they tell us. One of the factors responsible for the drop in premiums was the offering of some surplus metal by users. This resale zinc, following the cut in casting alloy prices, and some low priced sales of imported material, put some pressure on the market. A few buyers had gotten heavy shipments of metal bought when the premiums or the base price was lower. With some dropping off in the business of some of these users they offered their surplus metal for sale. Most of this resale metal was offered in the mid-West.

There are reports that though the markets for zinc outside the U.S. are still fairly strong, they do not show the great demand of a few months ago. For a period in April and maybe into May prompt metal could hardly be bought in Europe. This has now changed and demand for zinc outside the U.S. can be filled without pressing on metal smelted here. But it is not likely that there will be much price easing. London has remained just above the £90 level for prompt metal.

Strength in zinc later in the year is foreseen by some factors. In spite of the low steel rate, use of the galvanizing grade has held up very well and most continuous galvanizing lines have continued to operate. The easiness in autos and other hard good lines has hit zinc die-casting. The price for the base grade has held up in spite of these difficulties. If both lines come back with any strength later this year zinc could become very firm.

MOLYBDENUM—ore, per lb, f.o.b., $1.25

Workers at the Climax Molybdenum plant and mill in Colorado voted after a 15-hr strike to return to work under a new two-yr contract. The new contract provides for a 10c per hour increase the first year and 9c the second year. Vacation time, with pay, was increased. The exact increase in cost has not yet been determined by the company and so far there has been no indication of a price change.

ALUMINUM—primary pig 26c a lb; export 23¼c

The easy demand in aluminum is showing more strongly. Kaiser Aluminum & Chemical Corp. announced early this week it is closing one potline at its Mead, Wash., reduction plant July 23. Annual capacity of a potline at this plant is 22,000 short tpy.

Five of the plant's eight lines will continue to operate. Company officials said the cut-back is to reduce inventories.

Primary aluminum stocks jumped up considerably in April, the latest month for which the data are available (p 10). Some industry sources say that they may have moved up more since then.

IN THIS ISSUE . . .

Anaconda Modernizing ..... p 3
June Copper Institute Data ..... p 3
Watch These Trends ..... p 7
Daily and Average Prices ..... p 9
Zinc Institute Data ..... p 10

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E&MJ METAL AND MINERAL MARKETS

WEEKLY MARKET INFORMATION ISSUED BY THE PUBLISHERS OF ENGINEERING AND MINING JOURNAL

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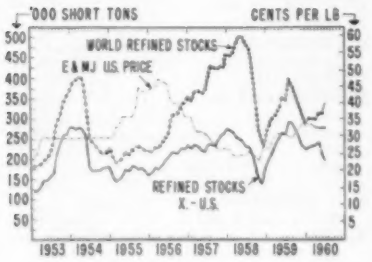
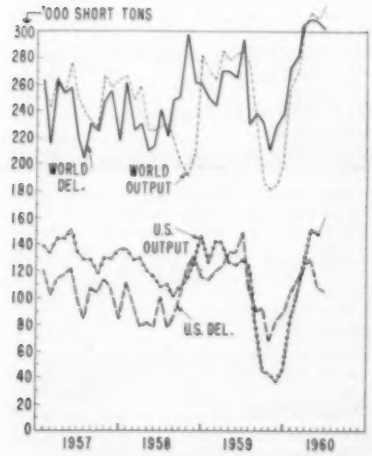
Copper Production and Stocks





Data, except price, are from the Copper Institute and are in thousands of short tons. They include June 1960. World refined output and stocks do not include the U.S.S.R., Japan, the Scandinavian countries, Yugoslavia, and the Mesina Mine in Transvaal. The series "X-U.S." are the above world stock statistics less the U.S. No fabricator stocks are included. Beginning with Jan. 1960 the C. I. includes data for mines formerly excluded.

Copper Stocks Rise

Copper Institute figures for May and June 1960 follow:

	May	June
United States		
Production:		
Crude primary	(a) 104,272	98,344
Crude secondary	13,857	13,585
Total	(a) 118,129	111,929
Refined Copper	147,050	161,073
Deliveries Refined	108,266	106,207
Stock, end, ref'd	65,328	87,667
Outside United States		
Production:		
Crude primary	(a) 196,798	207,221
Crude secondary	3,391	3,201
Total	(a) 200,189	210,422
Refined Copper	(a) 176,117	168,651
Deliveries Refined	(a) 213,517	198,093
Stock, end, ref'd	(a) 247,338	252,405

(a) Revised

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Titanium Production Increases

The production of titanium mill products in May totaled 810,464 lb, according to the Bureau of the Census.

Production of titanium ingot totaled 1,487,369 lb in May compared with 1,213,638 lb in April. Domestic consumption totaled 1,388,230 lb of ingot in May. The comparable total for April was 1,103,417.

Comparable figures for the production and shipments of titanium mill products for May and April 1960 are given, in lb, in the table below:

Product	Production[1] May	April
Sheet, plate and strip[2]	152,343	131,941
Forging and extrusion billet	462,660	264,541
Rod, bar and wire	195,461	138,260
Total	810,464	534,742

[1]For each product, shipments were equal to production.

[2]Includes small quantities of pipe, tubing and extrusions to avoid approximately disclosing the operations of individual companies.

Anaconda Modernizing Montana Copper and Zinc Operations

A $6,000,000 replacement and modernization program intended to make Montana smelting and mining operations competitive in the world copper and zinc markets and to stabilize employment is under way at the Anaconda Smelter of the Anaconda Co. E. I. Renouard, vice president of the Anaconda Co. in charge of western operations and W. A. Emanuel, manager of the Anaconda Reduction Works, who announced details of the program July 9, said:

"Improvements in copper smelting facilities and other operations, which will increase the efficiency of the plant and permit higher recoveries of metals from the ores treated will help make Montana metals competitive with those produced in other parts of the world. This is part of our answer to the problem of high costs which have constituted a serious threat to our mining and smelting operations in Montana for some time. Completion of the program will improve our competitive position and provide a firmer base for steady employment in our Montana operations."

Anaconda President Charles M. Brinckerhoff in a recent address before the New York Society of Security Analysists listed the Anaconda plant modernization and the Butte deep level mining development project as the company's major capital expenditures planned in Montana at this time.

Completion in 1961

The reduction plant program, one of the largest undertaken at the Anaconda works in many years is scheduled for completion in 1961. Some phases of it are already completed and others are now in various stages of completion or will be started soon. The plant processes ore from the company's mines in Butte and Nevada as well as ore and concentrates received from toll customers.

In addition to replacement of old-style equipment and improvements in metallurgical operations, a large modern system is being installed to recover water from waste tailings and re-use it in the concentrator. Highlights of the program are:

Replacement of the car dumper at the East Anaconda tipple where ore cars from Butte are turned upside down for unloading. The new installation will make for easier handling of the large 80-ton cars now in use on the Butte, Anaconda and Pacific Railway. This work is scheduled later this summer.

An anti-freeze system to spray ore cars also will be installed this fall at the tipple. In cold weather ore cars are thawed out by banks of infra-red heaters before they are sent back to Butte. This will help prevent freezing of ore in the cars.

Further improvements are being made in the dust-collecting equipment at the East Anaconda crusher. Electronically controlled conveyors and bins are contributing to a more efficient operation which minimizes spillage in the crusher and concentrator operations.

(Continued on p 11)

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OEEC Countries Increase Zinc Output, Reduce Lead

Paris — (McGraw-Hill World News) —Members of the Organization for European Economic Cooperation (OEEC) and associated countries produced 79,306 metric tons of refined zinc in May, rising by 765 tons over April and by 5% over May 1959 production.

Quality breakdown shows that 31,255 tons were High Grade and Special High Grade zinc, with at least 99.95% zinc content. Remaining 48,051 tons were GOB and debased zinc.

Producers in the OEEC area are Austria, Belgium and former Belgian Congo, France, Germany, Italy, Netherlands, Norway, Spain and United Kingdom.

Total refined zinc stocks held by smelters and refiners in the OEEC area rose to 54,512 metric tons by end of May from 50,580 at end of April. Stock figures include High Grade, Special High Grade, GOB and debased zinc produced from ores, concentrates and scrap. Stocks of remelted metal are not included.

Total production of zinc ores and concentrates in the area in May amounted to 41,770 metric tons of recoverable metal content, a gain of 545 tons over April 1960 and of 10% over May 1959.

Ore and concentrate producers in the area are Austria, France, Germany, Italy, Norway, United Kingdom, Spain, former Belgian Congo, Morocco and Tunisia.

The OEEC and associated countries produced 61,060 metric tons of pig lead in May, a 6% rise over May 1959 production, but 700 tons below April 1960.

Areas lead-producing countries are Austria, Belgium, Denmark, France, Germany, Greece, Italy, Netherlands, Spain, Sweden and United Kingdom, plus associated countries, Morocco and Tunisia.

Total stocks held at refineries in all producing countries, but Greece, Morocco and Tunisia, at end of May amounted to 69,299 metric tons, compared with 67,016 at end of April. Stocks figures include lead produced from ores, concentrates, bullion and scrap, but not remelted metal.

Production of lead ores and concentrates in OEEC area totaled 28,779 metric tons of recoverable metal content in May, a gain of 14% over May 1959 and of 1,187 tons over April 1960.

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Aluminum Fabricator To Expand in Australia

Aluminium Ltd. announced last week that Australian Aluminium Co. Ltd. has completed plans for a further expansion of its rolling mill and extrusion facilities in Sydney. These plans are being implemented nearly two years ahead of schedule.

The new expansion program calls for an increase of 4,500 long tons per annum in the capacity of the rolling mill, and an additional 1,700 long tons of extruded products a year. The cost of the additional facilities is estimated to be approximately A£1,800,000.

When the program has been completed in 1963, the Australian Aluminium Co. Ltd. will have the capacity to produce a total of approximately 20,000 long tons of rolled products and 9,000 long tons per annum of extruded products.

The Australian Aluminium Co. Ltd. is jointly owned by Aluminium Ltd. (50%) and British Aluminium Co. Ltd. (50%). The company operates a sheet rolling mill and extrusion plant at Granville, about 15 miles from Sydney, New South Wales. Production began in 1941 and since then continued growth in demand for aluminum products has justified steady expansion. The latest 9,000 ton extension of the rolling mill is almost complete at a cost of over A£3½ million.

The company is currently completing a new extrusion plant at Melbourne, in the state of Victoria, to produce aluminum sections at a cost of over A£500,000.

Aluminium Foils (Australia) Pty. Ltd. —a wholly owned subsidiary of Australian Aluminium Co. Ltd. — is currently completing a new foil mill at Sydney, New South Wales, with an initial capacity of 1,500 tons per annum. This capacity will be doubled during 1961 when additional equipment already on order will be installed. It will be the only aluminum foil mill in Australia to produce a comprehensive range of products.

The Australian Aluminium Co. Ltd. has been a prime mover in the introduction of a wide variety of new uses for aluminum in Australia.

Miscellaneous Metals

Wholesale lots, (a) f.o.b. ship. pt.; (b) delivered; (c) f.o.b. N.Y.; (d) Dep. on size of lot; (e) dep. on grade; (n) nom.

ALUMINUM: lb (b) eff. 12-17-59, ingot:
99.50%.....28.1c 99.80%.....29.1c
99.75%.....28.6c 99.85%.....30.1c

ANTIMONY: lb; dom., July 14-20
boxed N.Y. (c) 32.590
bulk (a)....29 boxed (a)....29.5
imported, 10 ton lots, 99%, N.Y., duty not paid
July 14.....22¾-23 July 19.....22¾-23
July 15.....22¾-23 July 20.....22¾-23
July 18.....22¾-23
Import duty is 2c a lb. For 99½% metal add ½-¾c. For 99.6% metal add ¾-1c:

BERYLLIUM: 97%, (a), lb $71.50

BISMUTH: lb, ton lots $2.25

CADMIUM: lb (b) July 14-20
Ton lots, Eff. Jan. 7, 1960.....$1.40
Less than ton lots $1.50
See Oct. 8, 1959, p. 12

CALCIUM: lb, ton lots, slabs, etc. $2.05

CHROMIUM: (b) lb of material,
exo. 98.5%, .05%C, ...(d)$1.15-1.19
Elec. 99.8% .....(d)$1.15-1.19
Vacuum melting .....4c more

COBALT: lb, (c), eff. 3-1-60
500 lb lots....$1.50 100 lb lots....$1.52
Less than 100 lb lots..$1.57 Fines..$1.50

COLUMBIUM: lb, 99½%, (d)
roundels....$36 rough ingots....$50

GALLIUM: gr, 1000-g lots $3

GERMANIUM: g
1000-g lots, 1st red .....29.5c(b)-30.15c(a)
intrinsic .....29.95c(b)-31.95c(a)
10,000-g lots, 1st red....28.15c(a)-29.5c(b)
intrinsic .....29.95c(b)-29.95c(a)

INDIUM: tr oz, 99.9%, small lots....$2.25
over 5,000 oz $1.35-2.25

IRIDIUM: tr oz $75-80

LITHIUM: lb 99.5% $9-11

MAGNESIUM: lb (a) 10,000 lb lots,
pig ingot 99.8% 35½c-36.65c
notched ingot 36c-37.45c

MANGANESE: lb (b) 95½%, carloads,
bulk 45c
packed 45¾c
elec (a) frt. allowed E. of Miss., 99.9%..34c
ton lots eff. 4-1-57 .....36c
prem for hydrogen removed .....¾c lb

MOLYBDENUM: (a) eff. 8-56
powder, carbon red $3.35

NICKEL: lb (a) duty included 74c
eff. 12-6-56
dealers 74c
powder (b) U.S. 74c
sinter (nickel content) point of entry,
eff. 7-14-58 .....69.6c

OSMIUM: oz (n) $70-90

PALLADIUM: tr oz eff. 1-18-60....$24-26

PLATINUM: tr oz $81-85
average $82

QUICKSILVER: flask, N.Y. $211-14

RHODIUM: tr oz $137-40

RUTHENIUM: tr oz $55-60

SELENIUM: lb, std. .....$6.50-$7
high purity $9.50

SILICON: lb (a) eff. 6-1-59
98% max. .51-1.0% Fe, crushed 20.85c
lump 19c
Hyper-pure: (4-1-57) #1.....$360
#2.....$250
#3.....$160
solar cell (4-1-57) .....$ 90

SODIUM: lb, carloads 16½c

TANTALUM: per lb(a)(e)powder $30-58.60
sheet (e) $50.35-59.18
rod (e) $73.04-80.23

TELLURIUM: lb $3.50

THALLIUM: lb $7.50

TITANIUM: lb (a) A-1 99.3%
max. .15% Fe $1.60
max. .3% Fe. eff. 8-1-59 .....$1.50

TUNGSTEN: lb 98.8%
1000-lb lots .....$2.75-$2.90
Hydrogen red 99.99% $3.35-4.25
dep. on Fisher No. eff. 12-28-59

VANADIUM: lb, 90% V 100 lb lots..$3.45

ZIRCONIUM: lb (a) sponge, powder
platelets: low hafnium $7-14
comm. $5-10

Metallic Ores

Tons of 2000 lb or units of 20 lb, unless otherwise stated. Short ton unit=stu; long ton unit=ltu. (a) c.i.f. U. S. ports, (b) f.o.b. ship pt., (c) f.o.b. mine or mill (g) depending on grade, (i) import duty extra, (n) nominal, (t) term contracts.

ANTIMONY ORE: stu of Sb:
50-55% ..... $2.25-$2.40
60% ..... $2.80-$2.90
65% lump ..... $3.30-$3.35

BERYLLIUM ORE: stu BeO, 10-12%
Dom. (c) — dep. on quan. ..... $46-$48
Imported (a), (t) ..... $34-$34.50
Spot (a) ..... $31.75-$32.50

CHROME ORE: lt, dry basis, subject to penalties if guarantees are not met, f.o.b. cars, Atlantic ports
Rhodesian: (t)
48% Cr_2O_3, 3 to 1, friable.. (n) $35.75-$36.25
48% Cr_2O_3, 2.8 to 1 ratio.... (n) $32-$33.50
48% Cr_2O_3, no ratio ..... (n) $27-$28
South African (Transvaal):
48% Cr_2O_3, no ratio..... (n) $25.50-$27
44% Cr_2O_3, no ratio..... (n) $19.75-$20.50
Turkish (basis 48% 3 to 1):
48% Cr_2O_3, 3 to 1 ratio, lump and concentrates ..... (n) $36-$38
46% Cr_2O_3, 3 to 1 ratio, lump and concentrates ..... (n) $33.50-$34
Pakistan (Baluchistan):
48% Cr_2O_3, 3 to 1 ratio ..... (n)

COBALT ORE: lb Co, free market
10% ..... (n) 60c
11% ..... (n) 70c
12% ..... (n) 80c

COLUMBITE ORE: lb pentoxide, 65% Cb_2O_5 and Ta_2O_5
Ratio 10:1 ..... $1.18-$1.25
Ratio 8½:1 ..... $1.05-$1.10

IRON ORE: lt, lower lake ports, Lake Superior ore 1959:
Bessemer
Mesabi 51½% Fe $11.60
Old Range $11.85
Non-Bessemer
Mesabi 51½% Fe $11.45
Old Range $11.70
Eastern ores, ltu, delivered, foundry and basic, 56-62% ..... (n)
Swedish (t) (a) 60-68% stu (g) ..... (n)
Brazilian (b) 68½% gross ton, premium for low P, 1-1-60..... $11.25
Smaller sellers $11

MANGANESE ORE: (a) (i) ltu.
Mn 46-48
Ind. Fe 10, P.15, Al+Si 13..... (n) 87c-90c
S. Af. Fe 9, P.05, Al+Si 13..... (n) 87c-90c
Mn 48-50, Braz. Fe 5, P.1, Al+Si 7, As .2 ..... (n) 91c

MOLYBDENUM ORE: lb cont, Mo.: 95% MoS_2 (b) : (eff. 1.1.58)
Climax, cost of container extra..... $1.25
Molybdic trioxide MoO_3, bags (b).... $1.46
cans $1.47

TITANIUM ORE: Ilmenite, gross tons TiO_2, 59½% f.o.b. cars, Atlantic ports ..... $23-$26
54% f.o.b. cars ..... $21-$21.50
Rutile, 94% st, for del. within 12 mos. $80

TUNGSTEN ORE: stu WO_3 65% basis foreign ore, (i), nearby arrival
Wolfram ..... $20-$20.25
Scheelite ..... $20-$20.25
Low moly scheelite, higher
U.S. scheelite, stu. (c) ..... $24-$25
London, ltu, WO_3 good ore
Wolfram 156s-162s

VANADIUM ORE: lb V_2O_5 cont, (c):
Domestic 31c

ZIRCON ORE: (sand) lt, (a)
Atlantic:
65% ZrO_2 ..... $50
Domestic 66%, st, (b):
Jacksonville ..... no quote
Stark, Fla. $47.25

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BRASS: Cents lb (base prices)

33c base:	Sheet	Wire	Rods
Yellow Brass	50.57	50.86	50.26
Best quality brass ..	52.07	52.36	51.76
Red brass 80%	53.53	53.82	53.22
Red brass 85%	54.58	54.87	54.27
Com'l bronze 90% ..	56.17	56.46	55.86
Gilding metal	57.23	57.52	56.92

Eff. 11-16-59

COPPER: lb, f.o.b. mill, eff. 11-9-59
Sheet, over 20" 57.13c
Rolls, 20" & under 56.41c
Wire, bare, carloads 38.35c

LEAD SHEETS: lb, full rolled..... 17½c

MONEL: lb, base prices
Cold-rolled sheet $1.20
Cold-rolled strip $1.08
Rods, hot-rolled $0.89

NICKEL: lb, base prices
Sheet, cold-rolled $1.35
Rods, hot-rolled $1.07

NICKEL SILVER: lb
Sheets, 10% 65.96c
18% 70.49c
Wire, Rods, 10% 68.06c

PHOSPHOR BRONZE: lb
Sheet, 5% Sn 77.44c
Wire, Rods, 5% 78.19c
10% 84.93c

ZINC: lb, base prices, carloads, f.o.b. mill
Sheet 26c
Ribbon 21½c
Plates 20c

ZINC DIE CASTING ALLOY: lb, ingot carloads, del. 5-16-60
No. 3 ..... 16¼c
No. 5 ..... 16½c

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Metallic Compounds

COPPER SULPHATE: lb, carloads, f.o.b., crystals or diamond, eff. 11-6-59
Per 100 lb $13.00

ANTIMONY TRIOXIDE: lb, 50-lb bags, f.o.b., eff. 3-21-60
Carloads 26½c
Less 29c

ARSENIOUS OXIDE: (arsenic trioxide) lb, refined, white, 99%.
Carloads, N.Y. docks, barrels 4-5c
F.o.b. Laredo, barrels 4½c
Laredo bulk 3½c
Crude, N.Y. barrels 4½c
Tacoma, barrels 3.6c
Laredo bulk 2.5c
Tacoma bulk 2.1c

COBALT OXIDE: lb, 350-lb containers, 72½-73½%, eff. 3-1-60:
East of Mississippi $1.15
West of Mississippi $1.18
70-71% $1.12-1.15

GERMANIUM DIOXIDE: gm..... 16¾c

•

U.S. Lead and Zinc Imports

Imports of lead and zinc for the third quarter of 1960 were the following, in short tons, at about 4 p.m. July 19, according to data from the U.S. Customs Bureau.

Lead Ore

Country	entered	quota
Australia	filled	5,040
Canada	filled	6,720
Peru	1,437	18,440
Bolivia	1,729	2,520
U. of S. Africa	6,617	7,440
Other	1,006	3,280

Lead Metal

Country	entered	quota
Australia	6,586	11,840
Canada	3,694	7,960
Peru	200	6,440
Mexico	1,323	8,080
Yugoslavia	2,260	7,880
Other	filled	3,040

Zinc Ore

Country	entered	quota
Canada	22,087	33,240
Mexico	12,252	35,240
Peru	4,354	17,560
Other	filled	8,920

Zinc Metal

Country	entered	quota
Canada	1,514	18,920
Mexico	0	3,160
Peru	0	1,880
Bel.-Lux.	0	3,760
Bel. Congo	0	2,720
Italy	386	1,800
Other	835	2,040

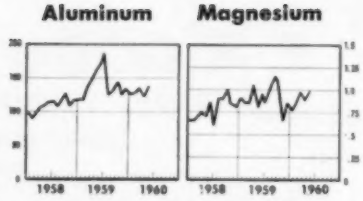
FRED H. LENWAY
AND COMPANY, INC.

112 MARKET STREET
SAN FRANCISCO 11, CALIF.
TELEPHONE: DOUGLAS 2-8560

Buyers of...

TUNGSTEN

METAL SCRAP
COMPLEX ORES
CONCENTRATES
GRINDINGS
RESIDUES



The charts show net shipments of aluminum and magnesium mill products in thousands of short tons per month. They are taken from U.S. Department of Commerce INDUSTRIAL REPORTS. Latest data for May 1960.

•

Australian Mine Output Up; Copper at Record

The £A202,000,000 ($454,500,000) value of 1959 Australian mineral production, exclusive of uranium, was slightly higher than for 1958, said Federal Statistician Stanley R. Carver.

Export value of copper more than doubled; mine, smelter and refinery output of this mineral set an Australian record, increased production coming mainly from the Mt. Isa (north-west Queensland) mines where total mine yield rose by 19,250 tons to 95,000 tons.

There was a considerable decline in output of tungsten concentrates, rutile, lead and zinc—the latter because of voluntary restrictions agreed upon by major world producers including Australia. Iron ore production rose by 250,000 tons to more than 4,000,000 tons, black coal was steady at the 1959 figure of 20,000,000 tons; output of asbestos, zircon and brown coal rose sharply and there was a slight increase in tin production.

Total value of mineral exports, excluding gold, rose more than £A4,000,000 ($9,000,000) to £A54,000,000 ($121,500,000); mineral imports were static at 1958 total of £A89,000,000 ($200,250,000), crude oil accounting for £A71,000,000 ($159,750,000) of this amount.

•

American Potash to Build Electrolytic Manganese Plant

Plans for the construction of a $5,000,000 electrolytic manganese metal manufacturing plant at Aberdeen, Miss., were announced by Peter Colefax, president of American Potash & Chemical Corp. The plant will have an initial capacity of 10-million lb per year and will be laid out to provide for further expansions.

Final design and engineering is now in progress, and field construction is scheduled for fall at the company's 1,600 acre site on the Tombigbee River seven miles outside of Aberdeen, with completion planned for late 1961. The new facility will be located adjacent to the company's sodium chlorate plant, which was completed early in 1959 and is currently undergoing a 50% expansion.

The new project broadens American Potash's position in manganese chemicals, which includes a large facility for the production of electrolytic manganese dioxide at Henderson, Nev.

The Aberdeen location for this operation will permit ready access to the steel industry, which is the principal consumer of manganese metal.

•

U.S. Mine Output of Lead Down 10% in May

Mines in the United States produced 20,700 tons of recoverable lead in May 1960, according to the Bureau of Mines, United States Department of the Interior. The May output represents a decrease of 10% from the April total. However, the January-May total, 113,200 tons, was 5% above the comparable period of 1959.

The price of common grade lead remained unchanged at 12c a lb New York market, throughout May—a price established December 21, 1959.

Production of lead from mines east of the Mississippi River in May was 623 tons, a 3.7% decline from the April total.

Mines of the Southeast Missouri Lead Belt yielded 9,250 tons, a decline of 2% from the April output. Mine production of small quantities of lead in May in Oklahoma and Kansas and from accumulated slimes by the Bird Dog Mill in Oklahoma represented total production from the Tri-State District.

Mine production of lead recoverable from ores of the Western States declined 16% to 10,720 tons. The decrease is again attributed largely to a reduction in the output from Idaho caused by a labor strike in the Coeur d'Alene region. Production from Montana, California and Arizona, however, increased.

SLAB ZINC

★ ELECTROLYTIC ★ FIRE RETORT

Special High Grade
High Grade
Continuous Galvanizing Line Grades

High Grade • Intermediate
Continuous Galvanizing Line Grades
Brass Special • Select
Prime Western

American Zinc sales company

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DISTRIBUTORS FOR: AMERICAN ZINC, LEAD AND SMELTING COMPANY
COLUMBUS, OHIO • CHICAGO • ST. LOUIS • NEW YORK
DETROIT • PITTSBURGH

WATCH THESE TRENDS

STRUBING, a recent development of Wolverine Tube, division of Calumet & Hecla, is a seamless light-wall tube, unique in that it is processed in strip form and rolled up for compact shipment. A brochure, which outlines the economies of shipping, packing and storing the product, tells how mechanical techniques are used to expand the strip into tubular form, the alloys being worked on, method of fabrication, size range and other particulars. A copy may be obtained by writing the company at 17200 Southfield Rd., Allen Park, Mich.

COLUMBIUM in precisely-controlled additions to the steel-making process has brought about a major advance in the manufacture of emergency oxygen administration equipment, according to National Steel Corp. A midget-sized, sphere-shaped container made of the new high-strength steel is the source of oxygen supply. The thin-gauge, light-weight steel must store 20 gal of pure oxygen and withstand pressures of 1,700 lb per sq in. on its inner wall surfaces.

COOLING RADIATORS made of copper and assembled with Silvaloy silver brazing alloys produced by the American Platinum & Silver Div., Englehard Industries are being used to solve the problems of heat dissipation in electronic equipment. Radiators, which range in size from 1½ in. to the size of cider jugs, absorb the heat of electronic tubes and dissipate it to the atmosphere. A gold brazing alloy is also produced by the company and is used to bond tubes to their radiators.

A NEW ZINC-TITANIUM-COPPER alloy, developed by a leading zinc producer, is reported by the American Zinc Institute to have greater creep resistance, resistance to grain growth at elevated temperatures and a lower coefficient of thermal expansion than normal with zinc or its more common alloys. Made of .8% copper and .15% titanium, markets in roofing products, builder's hardware, electrical equipment and automotive parts will be sought. The new rolled zinc alloy will be competitive with brass, copper, aluminum and steel.

A REGENERATIVE GAS TURBINE ENGINE has been installed in a truck used to haul nickel ore at Inco's open-pit mine at Copper Cliff, Ontario. The engine is a multi-fuel type, developing 225 hp, more than double the power of a comparable-sized piston engine, and approximately 70% more power per pound of weight. Approximately 30 lb of nickel is used in the alloys in this prototype engine. The highest percentage of nickel-containing materials is utilized in the hot end components such as the turbine blades, turbine wheels, combustion chambers and nozzle vanes.

STEEL'S STRENGTH AND HEAT RESISTANCE were used in an experimental jet hardsite and hangar located in New Mexico. The steel-framed hardsite, containing some 240 tons of steel products, is designed to withstand jet launching pressures and temperatures, as well as atomic attacks. It is also equipped for missile launchings. Within four seconds, a USAF F-100 supersonic jet, using a booster rocket, was reported to have been launched from a take-off distance of less than 1 in. and into a speed of 275 mph. The hardsite contains a 10-ft dia steel pipeline to remove fuel gases resulting from launchings.

A ZINC DIE CAST PART costing $1 has replaced a $4 aluminum part as a commutator mounting bracket for a stenciling machine. Defiance Machine & Tool Co. of St. Louis, beneficiary of the 75% slash in production cost, made the move because machining was reduced considerably, zinc showed greater tensile strength, was less bulky because of thinner walls, and has a smoother surface.

GUNMETAL OR BRONZE, although outmoded for a couple of centuries as a material for guns, combines the strength of a mild steel with a corrosive resistance to sea water. It is used for a wide variety of ships' fitments such as bilge pipes, pump parts, condensers, pins and bearings. The ability of the materials to withstand corrosion was vividly demonstrated by recovery of two Swedish warship cannons from the bottom of the sea near Stockholm after 292 and 330 years immersion. The corrosion rate was but .0002 in. per year, the Tin Research Institute reported.

THE HYDROCARBON FUEL CELL, which converts chemical energy into electrical energy in direct current form, is now powering a full-scale farm tractor in successful field tests conducted by Allis-Chalmers. The fuel cell has a possibility of 90% efficiency, whereas the best of diesel engines is about 40% efficient.

TEN ALUMINUM MINE CARS tested in a West Virginia coal mine indicate that aluminum cars can cut mine operating costs and withstand rugged service, Reynolds Metals has reported. The 17-ton cars weigh nearly 50% less than comparable steel cars, allowing the mine trains to pull 10% more loaded cars per train, without increasing gross train weight. After a year and a half's service the cars show no signs of corrosion.

TITANIUM is being used in a number of applications in the Canadair CL-44 cargo plane, the largest plane ever made in Canada. The high-strength-to-weight ratio metal is used in skins, bulkheads, firewalls of the four engine nacelles and in the tail pipe for the Rolls Royce Tyne turboprop engines, MAGNESIUM, published by Brooks and Perkins, reports.

SPRAYLAT is finding increased use as a protective coating for building metals. The plastic material was used on more than 11 acres of stainless steel and glass curtain wall surface of the new Union Carbide Bldg., New York City, to shield the finished surface from general construction and weather hazards during the skyscraper's erection. The protective plastic, a viscous water base compound, actually consists of two layers of filmy elastic. First black and then white coats of the stripping are applied to the sheets before they are fabricated into finished panels.

TWO HIGH ALUMINA BRICKS and a companion mortar are now available for use in refractories for aluminum melting furnaces, according to Kaiser Aluminum. The new bricks, low in silica and made to a special formulation, are highly resistant to the severe conditions imposed by molten aluminum alloys.

Nonmetallic Minerals

Prices received vary and depend upon the characteristics of the commodity. Hence quotations can serve only as a general guide to the prices obtained by producers and dealers for their product.

St – short ton; lt – long ton, (a) c.i.f. U.S. ports, (b) f.o.b. shipping point (c) f.o.b. mine or mill, (d) carload lots, (e) depending on grade, (f) f.o.b. vessel, (g) f.o.b. pt. of origin, U.S. port, (n) nominal.

ASBESTOS: st, (c), Quebec
- Canadian funds, eff. Oct. 1, 1957:
- Crude No. 1 ..... $1400–$1725
- Crude No. 2 ..... $750–$1155
- Spinning fibers: 3-F ..... $590–$600
- 3-K ..... $500–$505
- 3-R ..... $425–$430
- 3-T ..... $400–$405
- 3-Z ..... $370–$375
- Shingle stock: 4-K ..... $180–$220
- Paper stock ..... $120–$142
- Waste ..... $75–$86
- Shorts ..... $40–$75

Per st, f.o.b. Vancouver, B.C.
- Canadian funds, eff. Oct. 1, 1957
- Crude No. 1 ..... $1,522
- AAA $787
- AA $682
- A $494
- AC $325
- AK $220

F.o.b. Morrisville, Vt., st, U.S. funds
- Spinning fiber ..... $353–$408
- Shingle fiber ..... $181–$218
- Paper fiber ..... $120–$142
- Waste, stucco or plaster $86
- Refuse or shorts ..... $41–$75

BARYTES: – f.o.b. cars
- Georgia: barytes ore, crude, jig and lump, per st $18
- beneficiated, per st. in bulk $21
- in bags ..... $23.50–$25
- Missouri: st, water ground and floated, bleached, (d), (c) ... $45–$49
- Crude ore, minimum 94% $BaSO_4$, less than 1% Fe ..... $16–$18
- Crude oil well drilling min. 4.3 specific gravity, bulk, st $18
- Some restricted sales $11.50
- Ground, oil well grade $26.75
- Imported, crude oil well drilling, minimum 4.25 specific gravity, bulk, st c.i.f. Gulf ports ..... $16–$18
- Canada: crude, in bulk, (b), per lt $11
- ground, in bags, st $16.50

BAUXITE:
- Imported calcined, crushed (abrasive grade) 86% min. Al_2O_3 per lt, f.o.b. port Br. Guiana $20.45
- Refractory grade (corrected) $26.60
- Approx. 60% Al_2O_3 and 6% silica, Fe 1¼% f.o.b. vessels Brit. Guiana per lt, (e) 1-1-60 ..... $7.25

BORAX: bulk, (d), st (b),
- technical, 99½% $43.50
- Dehydrated, min. 99¼% $83
- Sodium Borate concentrates, 46% B_2O_3 ..... $47.50

CORUNDUM: st, crude, c.i.f.
- U.S. ports, crystal ..... $120-$130
- Boulder ..... $70-$75

FELDSPAR: st. (b), N.Car. bulk
- 200 mesh ..... $17-$20.50
- 325 mesh ..... $20.50-$23.50
- 20 mesh semi-granular $9
- 40 mesh glass $13.50

FLUORSPAR: (price range indicates sellers quote different prices) met. grade eff. CaF_2 content, st, (b) Ill. and Ky.
- 72½% ..... $37–$41
- 70% ..... $36–$40
- 60% ..... $33–$36

Acid grade concentrates, dry basis, eff. 7-1-59, st, bulk, (d):
- F.o.b. Ill.-Ky.-Col.; spot $49
- contracts $45
- In bags, extra $3

Ceramic grade,
- 95% CaF_2 ..... $45–$48
- 93 to 94% CaF_2, calcite and silica variable, Fe_2O_3 0.14%, st in bulk, f.o.b. Ill. & Ky. ..... $43-$45
- In 100-lb paper bags, extra $3

European fluorspar c.i.f. U.S. ports, duty paid, st:
- Metallurgical, 72½% eff. CaF_2 spot ..... $33-$34
- contracts ..... $32-$34
- acid grade, 0.3% moisture max., contracts (spot $1 more) $50
- Large discount for high moisture.

Mexican fluorspar, f.o.b.
- border, met., 72½% effective CaF_2
- all rail, duty paid, st ..... $26.50-$27.50
- Brownsville, Tex., barge .... $28.50-$29.50

NATURAL GRAPHITE: lb
- Crystalline semi-processed: (flake type, non-amorphous)* (a) (d)
- 86-88% C., crucible grade 7½-14c
- 94% C., normal and wire drawing .. 20-27c
- 96% C., special and dry usage 22-27c
- 98% C., special for brushes, etc. .. 25-30c
- Madagascar: lb
- Special grades 85-87% C 10c
- Special mesh 13c
- Special grade 99% C 40c
- Amorphous crude: (non-flake, cryptocrystalline) (bulk) (g) ton
- Mexican (80-85%) $15-19
- Hong Kong (78-85%) $15-19
- Korean (1958) $18

*Prices include costs from point of origin, and importers handling costs, commissions, etc.

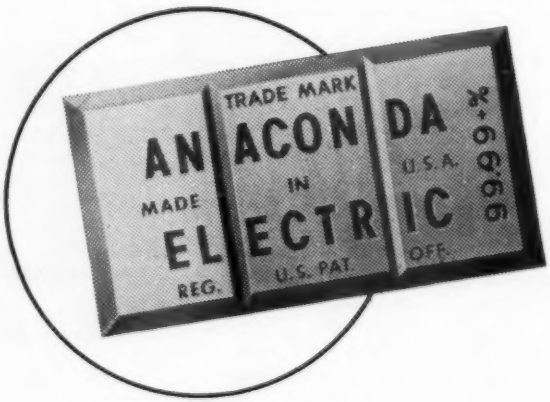
(Continued on p 12)

copper
Electrolytic NEC* CCC*

zinc
99.99+% Electric*
High Grade Electrolytic

lead
Common Desilverized ILR*

aluminum
Pig • Ingot



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ANACONDA from mine to consumer

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60211

E&MJ QUOTATIONS

Daily Prices of Metals

July	COPPER ELECTROLYTIC Domestic Refinery	Export Refinery	Europe c.i.f.	LEAD New York	St. Louis	ZINC (b) Delivered (a)	East St. Louis	ALUMINUM Primary Pig 99.5% U.S. dest.	Export	TIN Straits New York
14	32.600	31.600	32.545	12.000	11.800	13.500	13.000	26.000	23.250	102.875
15	32.600	31.025	31.970	12.000	11.800	13.500	13.000	26.000	23.250	103.000
18	32.600	30.900	31.845	12.000	11.800	13.500	13.000	26.000	23.250	103.375
19	32.600	31.000	31.945	12.000	11.800	13.500	13.000	26.000	23.250	103.625
20	32.600	31.300	32.245	12.000	11.800	13.500	13.000	26.000	23.250	104.250
Averages	32.600	31.165	32.110	12.000	11.800	13.500	13.000	26.000	23.250	103.425
Calendar Wk. Avgs.										
July 11-15	32.600	31.400	32.345	12.000	11.800	13.500	13.000	26.000	23.250	102.725

(a) Prime Western Zinc sold on delivered basis at centers where freight from East St. Louis exceeds one-half cent a pound.

The above quotations are our appraisal of the major United States markets, based on sales reported by producers and their agencies. They represent payments received by producers for the product. They are reduced to the basis of cash, New York or St. Louis, as noted. Prices in cents per pound.

Copper, lead and zinc quotations are based on sales for prompt and future deliveries; aluminum weighted average prices are based on estimated sales and announced prices; tin quotations are for prompt delivery only.

COPPER prices, domestic, in the trade are quoted on a delivered basis, that is, delivered at consumer's plants. Delivery costs vary with the destination. The above prices are net prices at the refineries; the average shipment cost is deducted in order to arrive at a refinery price. Beginning Jan. 2, 1957, the average differential between delivered and f.o.b. prices is taken as 0.400c per lb.

COPPER quotations, foreign or export, reflect prices obtaining in the open market and are based on sales in the foreign market reduced to the f.o.b. refinery equivalent, Atlantic seaboard. On f.a.s. transactions, eff. Jan. 2, 1957, we deduct 0.125c for lighterage, etc., to arrive at the f.o.b. refinery quotation.

COPPER, Europe, c.i.f., is the export refinery quotation with the addition of the lighterage figure 0.125c, and freight to main Continental ports, 0.82c.

COPPER quotations are for ordinary forms of wirebars and ingot bars. The premiums on special shapes, effective in some instances on deliveries beginning Sept. 1, 1955, are: Standard ingots 0.25c per pound; slabs 0.55c and up, cakes 0.6c and up, depending on weight and dimensions; billets 1.725c and up, depending on dimensions and quality. Discount on cathodes 0.125c to 0.15c per pound.

ZINC quotations reflect sales of the Prime Western grade as well as sales of other grades when sold on a Prime Western basis. (b) **Zinc premiums** . . . obtaining over Prime Western zinc in the East St. Louis market on the following grades, in cents per pound: **Selected 0.10c; Brass Special 0.25c; Intermediate 0.5c. High Grade** zinc sold on contract, delivered to the consumers' plants, commands a premium of 1.35c per lb eff. July 1, 1960, over the East St. Louis basis for Prime Western. **Special High Grade** premium or differential is 1.5c per lb eff. July 1, 1960.

LEAD quotations are for the common grade, and are based on sales of domestically refined metal sold to domestic consumers. The differential on sales in the Chicago district is 15 points under New York; for California 20 points under New York; for New England add 7½ points to the New York basis. Corroding grade commands a premium over common lead of 10 points.

ALUMINUM quotations refer to primary pig, 99.5% in cents per pound. The U.S. price is delivered to buyers' plant; it includes sales by Canadian producers. The export price is the price at which U.S. primary producers sell c.i.f. (delivered) foreign ports. The quotations are weighted averages with the weights determined by the relative capacity of the producers. Ingot sales reduced to the pig price are included in determining the price. The premium on standard ingots is 2.1c per lb.

Note: The daily quotations for copper, lead and zinc are weighted averages of sales reported to E&MJ; weekly averages are arithmetical averages of the daily quotations; monthly averages are the arithmetical averages of the daily quotations.

Silver, Gold, and Sterling Exchange

July	Silver N.Y.	London	Sterling Exchange	London Gold (a)
14	91.375	79.250d	280.8500	250s. 0d
15	91.375	79.250d	280.8500	249s. 11½d
18	91.375	79.250d	280.8725	249s. 10¾d
19	91.375	79.250d	280.9540	249s. 10½d
20	91.375	79.250d	280.9860	249s.10¾d
Av.	91.375	—	280. 903	—
Calendar Wk. Avgs.				
July 11-15	91.375	—	280.812	(a) Open Market

The daily silver quotation reported by Handy & Harman, in cents and fractions of a cent per troy ounce, is the price paid by Handy & Harman in settlement for silver contained in unrefined silverbearing materials submitted to them for refining. It is determined on the basis of offers of bar silver .999 fine as made to Handy & Harman for nearby delivery at New York by regular suppliers in quantities sufficient to meet daily requirements, and it is usually one quarter cent below the price at which such offers are made.

The Treasury's purchase price of newly mined domestic silver was established at 90.5c per troy ounce, 1000 fine, effective on July 1, 1946, under an amendment to the Silver Purchase Act of July 6, 1939.

London silver quotations are in pence per troy ounce, basis .999 fine.

London gold quotations are per troy ounce, basis 1000 fine.

Sterling, in cents, noon buying rate for cable transfers as certified by the Federal Reserve Bank of New York, for customs purposes.

Aluminum Alloys Secondary July 14-20

	Tons	Price/lb
No. 13	41	25.03c
No. 43	12	25.10c
No. 360	No Quote	
No. 380		
1% Zn	616	24.00c
2% Zn	No Quote	
3% Zn	84	23.25c

The secondary aluminum alloy prices are weighted average prices calculated from reports by secondary aluminum producers of the prices and quantities of their sales.

London Metal Exchange

July	COPPER Cash Bid	Cash Asked	3 Mo. Bid	3 Mo. Asked	LEAD Current Month Bid	Current Month Asked	3 Mo. Bid	3 Mo. Asked	ZINC Current Month Bid	Current Month Asked	3 Mo. Bid	3 Mo. Asked	TIN Cash Bid	Cash Asked	3 Mo. Bid	3 Mo. Asked
14	257½	258	249½	250	70⅜	70½	71¾	71⅞	90	90⅛	90	90⅛	809	810	805	806
15	252	253	245½	246½	70¾	71	71¾	72	90⅛	90⅜	89⅞	90⅛	812	813	806½	807
18	252	253	246	246¼	70⅜	70⅝	71⅜	71¾	90⅛	90¼	89⅞	89¾	810½	811½	808	809
19	255	255½	247¼	247½	71	71¼	71¾	71⅞	90	90¼	89⅞	89¾	813	813½	810½	811
20	257	257¼	248	248½	71	71⅛	71⅞	72	90⅜	91	90	90¼	818	818½	818	819

Prices are for the official a.m. session in pounds sterling per ton of 2240 lb. Copper basis electrolytic and fire refined wire bars, lead 99.97%, zinc 98% and tin min. 99.75%.

THIS WEEK'S BUSINESS INDICATORS

	Latest Week	Preceding Week	Month Ago	Year Ago	Net Change Year Ago
Steel Rate (% of capacity in operation)	(d) 54.6	(a) 51.8	64.3	13.5	+41.1
Steel Ingot Production, thousands of tons	(d) 1,556	(a) 1,476	1,739	365	+1,191
Automobile Production (cars and trucks)	(d) 132,360	(a) 111,656	173,574	164,190	−31,830
Electric Power Output (millions kwh.)	13,031	14,247	13,766	13,502	−471
Engr'g Const. Awards, 4-week daily av., in thousands (c)	$101,131	99,621	93,195	93,512	+$7,619
Federal Reserve Index of Industrial Production (b)	110 June	....	110	110	—
E&MJ Index of Nonferrous Metal Prices (e) (f)	125.9 June	....	125.8	121.0	+3.9
All Commodities. Bureau of Labor Statistics (e)	(d) 119.6 June	....	119.7	119.6	—

(a) Revised. (b) Base (100), 1957. (c) From Eng. News-Record. (d) Preliminary. (e) Base (100) 1947-49. (f) Weights 1922-24.

BISMUTH
CADMIUM
LOW MELTING ALLOYS
AND PRECIOUS METALS
TIN·SILVER

PURCHASERS OF: ORES, METALS, RESIDUES, CHEMICALS, ETC.

Producers of: Hi-Purity Metals and Alloys

United Refining and Smelting Co.
2920 W. Carroll Ave.
Chicago 12, Illinois
SAcramento 2-3300

Zinc Stocks Jump; High Grade, PW Shipments Dip

A summary of the May and June 1960, American Zinc Institute statistics in short tons, follows:

	May	June
Stock at beginning	147,861	165,038
Production	79,216	76,723
Production, daily rate	2,555	2,557
Shipments:		
U.S. Industry	54,790	50,690
Export and drawback	7,249	3,385
To Gov't	...	...
Totals	62,039	54,075
Stock at end	165,038	187,686

Shipments by grade follow:

	May	June
Special High	18,950	17,877
Regular High	6,846	2,778
Intermediate	939	966
Prime Western, etc.	35,304	32,454
Totals	62,039	54,075

Slab zinc production by grades, with minor deductions for metallurgical losses in upgrading metals, in tons:

	May	June
Special High	32,695	29,023
Regular High	6,095	7,041
Intermediate	749	1,276
Prime Western, etc.	39,677	39,383
Totals	79,216	76,723

Stocks of slab zinc at the end of May and June by grades, in tons:

	May	June
Regular High	46,041	57,187
Intermediate	11,411	15,674
Prime Western, etc.	1,512	1,822
Special High	106,074	113,003
Totals	165,038	187,686

Aluminum Stocks Gain

U.S. primary aluminum stocks made a sharp upward surge in April reaching 139,267 tons, compared with 114,984 at the end of March. April shipments were down to 144,469 tons, compared with 172,846 tons the previous month.

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Ferroalloys

(a) carload lots; (b) delivered; (c) lump, bulk; (d) f.o.b. shipping point; (n) nominal

FERROCHROMIUM: lb contained Cr; (a) (b) (c) cont. U.S.
High carbon (4-9% C, 65-70% Cr) (Cr) 28.75c
Low carbon (0.10% C, 67-72% Cr) eff. Oct. 1, 1957 ..... 38.50c
Special (0.25% C, 63-66% Cr) eff. Jan. 22, 1960 ..... 35.75c
Charge chrome 1 ..... 22c
Refined chrome 1 ..... 25c

FERROCOLUMBIUM: lb contained Cb; ton lots, lump (2 in.) packed; (b) cont. U.S.—(50-60% Cb. max 0.40% C, max 8% Si) $3.45

FERROMANGANESE: lb (a), (c), (d) (74-76% Mn)
Standard, eff. 1-19-60 ..... 11c
Medium Carbon- lb contained Mn; (a), (c), f.o.b. U.S. — (80-85% Mn, 1¼-1½% C) 24c
Low carbon-basis as for Med., Carbon- (85-90% Mn, Max. 0.07% C) 35.10c

FERROMOLYBDENUM: lb Mo; lots 5000 lb or more, (d) (58-64% Mo) powdered, packed $1.82
Other sizes, packed $1.76
Calcium Molybdate (CaO MoO3) lump, packed $1.50

FERROPHOSPHORUS: per gross ton; (a), (c), (max 6 in.); (d) (equivalent to Tenn.) (23-26% P) $110
plus $4 per 1% above or below 24%.

FERROSILICON: lb contained Si; (a), (c), (d) (50% Si) 14.60c

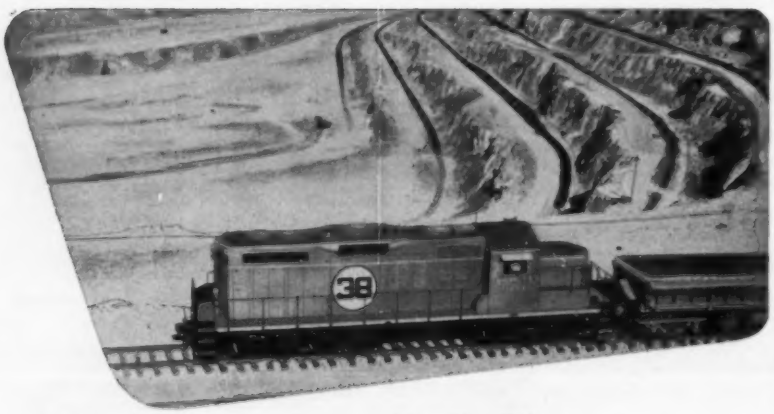
FERROTITANIUM: low carbon — lb contained Ti; ton or more lots, lump (½ in.), packed, f.o.b. dest. NE U.S. — (40% Ti, max 0.10% C) $1.35
(25% Ti, max 0.10% C) $1.50
Medium Carbon — net ton; (a), lump, packed; f.o.b. dest. NE U.S. — (17 to 21% Ti, 3-5% C) $290-5
High carbon — basis as for Med. carbon — (15 to 19% Ti, 6 to 8% C) .. $240-5

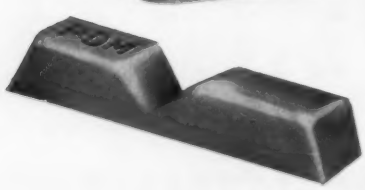
FERROTUNGSTEN: lb contained W; lots of 5,000 lb or more, lump (¼ in.), packed; f.o.b. dest. cont. U.S. — (70-80% W) (n) $2.15

FERROVANADIUM: lb V; (a), var. sizes, packed; f.o.b. U.S. — (50-55% V)
open hearth $3.20
crucible $3.30
high speed $3.40

SILICOMANGANESE: lb; (a), (c), (d).
(1.5% C max 18-20% Si) 11.60c
(2% C max 15-17½% Si) 11.30c
(3% C max 12-14½% Si) 11.10c

SPIEGELEISEN: per gross ton; (a), (c) f.o.b. Palmerton, Pa., Pittsburgh
3% max Si, 16-19% Mn $98-100.50
3% max Si, 19-21% Mn $100-102.50
3% max Si, 21-23% Mn $102.50-105
Eff. on orders of Jan. 22, 1960





P. D. M.
FIRE REFINED COPPER
High Purity Ingots and Ingot Bars
COPPER 99.93%

From Morenci come ores unusually free of impurities. Fire refining these ores gives the quality product — P.D.M. Fire Refined Copper — for use in brass mills and foundries in making high grade products.

PHELPS DODGE CORPORATION
300 PARK AVENUE • NEW YORK 22, N. Y.
"One of the Great Names in Copper"

Anaconda Modernizing

(Continued from p 3)

New matte tapping facilities are being installed to reduce the amount of escaping gas and decrease the amount of scrap material which has to be melted. Modern burner equipment for the reverberatories will result in improved efficiency in the burning of gas.

Newly-designed smoke controls are being installed on hoods of the converters. Casting equipment for making copper anodes is being modernized.

Numerous fans, ducts and dust collectors are being installed to prevent air pollution. When this work is completed, the Anaconda plant will be one of the best ventilated in the United States.

The new tailings and water recovery system involves the installation of a hydroseparator, tailing thickener, pumphouse and miles of pipe lines. The smelter must dispose of about a million tons of tailings, the waste product of concentrating operations, each month.

Use 48-Inch Pipe

Tailings from the concentrator will pass through a 48-inch pipeline 4,000 feet long to the hydroseparator where coarse material in the waste will be settled to the bottom and fed out through a 16-inch line for construction of dam facilities in the new disposal area. There will be 41,000 feet, or approximately eight miles, of 16-inch line.

Overflow water from the thickener will be pumped back to the concentrator for re-use. Approximately 17,000,000 gallons of water a day will be recovered, or more than one-fourth of the plant's daily requirement of 58,000,000 gallons.

Several regrind mills are being replaced by the installation of three new ball mills, each nine feet in diameter and 14 feet long driven by 900 horsepower motors. There also will be six new 28-cell flotation machines and auxiliary equipment.

Ball mills are part of the system which grinds the ore fine enough to allow copper minerals to be carried by the froth in the flotation machines to the top of the flotation cells. The new mills will permit treatment of a larger tonnage, provide a finer grind and a higher grade of concentrate. This project is scheduled for completion in August.

Ball-making equipment is being modernized in the foundry to assure the economic production of high quality balls for the regrind mills.

One of the largest projects of the program is modernization of the roaster and reverberatory furnace departments.

Two New Roasters

Two modern fluid bed roasters will be installed to take the place of 12 of the oldstyle roasters. They will provide a larger capacity and greater efficiency. Mixing of dry and wet material will give a dust-free feed for the reverberatory furnaces. A conveyor belt system to carry the mixture from the roaster building to the reverberatories will replace the antequated tramming system and make for a much cleaner operation.

The thickener, now under construction, is 370 feet in diameter and is among the largest, if not the largest, in the world. It will form a pool covering about two and a half acres. A steel overpass is being erected to carry the tailings pipelines over Highway 10-A east of the plant.

The new disposal system, with its large area to store more than 40,000 tons of waste tailings produced each day, will be important in the company's extensive water pollution control system.

Another phase of the smelter modernization is the erection of a new crushing plant for miscellaneous material to replace the old lime rock crushing plant which was built in 1902. The new plant is due to be completed this fall.

The present Anaconda smelter began operations in 1902 and over the years has increased in size and capacity. The plant now occupies 459 acres and includes about 600 buildings. The Anaconda plant often has set the pace for world metallurgical progress. The current modernization program is one of a series during the years which have made the smelter one of the largest and best known of its kind in the world.

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Zinc Oxide Production in The U.S. Down in May

Production of lead-free and leaded zinc oxide in the United States in May 1960 totaled 14,600 tons, about 1% less than April 1960 and 11% below May 1959, according to the Bureau of Mines.

COPPER • ZINC

BUYERS: ORES
CONCENTRATES
SCRAP, RESIDUES

FOR PHELPS DODGE
PLANTS
in Laurel Hill, L.I., N.Y.
Douglas, Ariz.
El Paso, Tex.

FOR NATIONAL ZINC CO.
(Subsidiary)
Bartlesville, Okla.

SELLERS: COPPER
(Electrolytic)
CADMIUM, MERCURY
ZINC, BY-PRODUCTS

INTERNATIONAL MINERALS
AND METALS CORPORATION
11 BROADWAY
NEW YORK 4, N. Y.

CHROME ORE
IRON ORE

MANGANESE ORE
FLUORSPAR

AMMC
Cable: "ZINCUM"

associated metals & minerals corporation
75 West Street, New York 6, N. Y. WH 3-5040

Nonmetallic Minerals

(Continued from p 8)

KYANITE: st, (b), Va. and S.C.,
35 mesh, (d), in bulk.....$44-$45
in bags $47
200 mesh, in bags, (d).....$53-$55
Imported kyanite, 60% grade,
in bags, c.i.f. Atlantic ports, st. ....$76-$81

MAGNESITE: st, f.o.b. Chewelah,
Wash. dead burned grain, in bulk.....$46
in bags $52
Crude, bulk, (d), st. $27.50
Calcined, pebble $37.50
ground $41.75

MICA: North Carolina district, clear sheet mica, per lb:

Size	
1½ x 2 inch	.70 – $1.10
2 x 2 "	$1.10 – $1.60
2 x 3 "	$1.60 – $2.00
3 x 3 "	$1.80 – $2.30
3 x 4 "	$2.00 – $2.60
3 x 5 "	$2.60 – $3.00
4 x 6 "	$2.75 – $4.00
6 x 8 "	$4.00 – $8.00

Punch mica, (e).....7c–12c
Stained or electric sheet mica:
10-20% less than clear.
North Carolina, wet ground
st, (e) .....$140 – $155
Dry ground .....$30 – $55
Scrap (e) .....$20 – $30
Madagascar sheet mica first quality high heat, duty paid, N.Y., lb:
Grade 7 (below 1 sq. in).....50c
Grade 6 (1 to 1½).....85c
Grade 5 (3 to 6).....$1.20
Grade 4 (6 to 10).....$1.50
Grade 3 (10 to 14).....$1.90

MONAZITE: lb. (a) 55% total rare earth oxides, including thorium:
Massive .....(n)14c
Sand, 55% grade .....(n)10c-15c
66% .....(n)18c
68% .....(n)20c

OCHER: st, (c) Georgia, in 100-lb paper bags.....$26.50 – $32
Virginia (c) dark yellow, 300 mesh, 60% ferric oxide, bags.$24.50 – $25.50

PHOSPHATE: per lt, (c): Florida pebble:

77 to 76%....	$8.21.....	(f)$10.00
75 to 74%....	7.21.....	(f) 9.00
72 to 70%....	6.21.....	(f) 8.00
70 to 68%....	5.56.....	(f) 7.50
68 to 66%....	5.16.....	(f) 6.85

PYRITES: Spanish 48% sulphur (a), (n). U.S. and Canadian per lt. delivered .....(n)$9 – $11

PUMICE STONE: per lb f.o.b. New York or Chicago, in barrels:
powdered 3c–5c
lump 6c–8c

QUARTZ ROCK CRYSTALS:
for fusing, all sizes, per st.....$100 – $150
Prisms for piezo-electrical and optical use, according to size and grade, per lb.....$4.50 – $50

SILICA: st, air-floated,
92 – 99½% through 325 mesh:
in bags .....$22 – $35
Glass sand, (c) st, bulk, (e).....$1.50 – $5

(Others: See June 23 MAMM)

London Copper Prices

The following prices in £ sterling per long ton c.i.f. European ports are calculated by the London Metal Bulletin (see M&MM Feb. 13, 1958, p 3).

July 11	254.855	July 14	259.378
July 12	260.605	July 15	254.997
July 13	260.386		
Av.	258.044		

Brass and Bronze Ingot

85-5-5-5 (No. 115) 29¼c; 80-10-10 (No. 305) 33¾c; 88-10-2 (No. 215) 38¾c; Yellow (No. 405) 23¾c and upward; Manganese bronze (No. 420) 27¼c.

Tri-State Concentrates

Joplin, July 19, 1960

(a) *Blende*	*Per Ton*
Prime coarse, 60% zinc	$80
Flotation, 60% zinc	$80

(a) Effective Jan. 8, 1960

Galena	
Coarse and flotation, 80% lead....(a)	$141.72

(a) Effective Dec. 21, 1959

Lead Average (Monterrey)

The net price realized by the American Smelting & Refining Co. on all of its sales of Mexican pig lead, including metal sold for consumption in Mexico, during the week ended July 16, 1960, was 8.71c (U.S. per lb f.o.b. refinery) Monterrey, Mexico.

Dealers' Scrap Prices

Dealers' buying prices, f.o.b. New York or equivalent freight points, for wholesale quantities, in cents per lb.

No. 1 copper wire	23–23½
Heavy copper & wire, mixed	21–21½
Light copper	18¾–19¼
No. 1 composition	17½–18
Composition turnings	16–16½
Light brass	10½–11
Yellow brass turnings, mix	11–11½
Heavy yellow brass, mixed	11½–12
Auto radiators, unsweated	12¾–13
Brass pipe, cut	13½–14
Rod brass turnings, No. 1	12–12½
Rod ends, brass	12–12½
New soft brass clips	14–14½
Cast aluminum, mixed	10–10½
Aluminum crankcases	9½–10
Aluminum clips, new soft	14–14½
Sheet aluminum, old clean	9½–10
Aluminum turnings, clean	6–6½
Zinc die cast, mixed	2–3
Zinc die cast, new	4¼–4½
Old zinc	4–4½
New zinc clips	7–7¼
Soft or hard lead	8¼–8½
Battery plates	3–3¼
Babbitt mixed	9½–10
Linotype or stereotype	9–9½
Electrotype	8–8½
Solder joints close cut	13½–14
Block tin pipe	78–79
Autobearing babbitt	40–41
Monel clips, new	23-24
Monel sheet, clean	22-23
Nickel, rod ends	50-51
Nickel, clippings	50-51

Smelters' Aluminum Alloys

Delivered prices of smelters' aluminum ingot, per pound, in lots of 10,000 lb or more.

Piston alloy D132 26½-27½c. No. 12 alloy 24-24½c. No. 13 alloy, max. .30 copper, 25¼-25½c.

Deoxidizing grades: No. 1, 24¾-25¼c; No. 2, 24-24½c; No. 3, 22½-23½c; No. 4, 22-22½c.

See page 9 for casting alloys.

Smelters' Copper Scrap Prices

Custom smelters' buying prices for scrap, carload lots, refinery:

No. 1 copper and wire, 27½c; No. 2 heavy copper, 25c; light copper, 22¾c; refinery brass, 23c.

A Custom Smelter Copper Price July 14-20

The following prices are computed by M&MM from data on flat price and average price sales reported by the American Smelting & Refining Co. They refer to electrolytic copper in standard shapes.

Delivered consumers' plants 32.750c
F.O.B. refinery 32.350c

They are for sales in the U.S. market and are adjusted to the nearest ⅛c. A ¼c deduction for selling commission has been made.

N.Y. Commodity Exchange

	COPPER					LEAD				ZINC				TIN			
	July		Sept.			July		Sept.		July		Sept.		Sept.		July	
July	Bid	Asked	Bid	Asked	C	Bid	Asked	Bid	Asked	Bid	Asked	Bid	Asked	Bid	Asked	Bid	Asked
14	31.61	31.61	30.87	30.87	260	11.10	11.18	11.21	11.21	11.27	11.40	11.40	11.50	•	•	•	•
15	31.55	31.60	30.55	30.55	260	11.10	11.25	11.20	11.25	11.27	11.40	11.40	11.50	•	•	•	•
18	31.76	31.76	30.76	30.76	349	11.18	11.20	11.28	11.32	11.30	11.38	11.40	11.50	•	•	•	•
19	31.69	31.69	30.67	30.67	243	11.15	11.25	11.25	11.30	11.25	11.38	11.35	11.43	•	•	•	•
20	31.70	31.70	30.96	30.96	404	11.15	11.25	11.25	11.30	11.25	11.32	11.35	11.40	•	•	•	•

•Trading suspended.

Closing quotations on the N.Y. Commodity Exchange in cents per lb. C is number of contracts traded for the seven months of the year for which the Exchange accepts trading. Each contract is for 25 tons. Where bid and asked prices are the same, closing quotation was one at which transactions occurred.